

1. An isolated or purified antibody or fragment thereof, comprising:
- a) a light chain comprising a complementarity determining region (CDR) L1 sequence of QSLLNSX₁X₂QKNX₃ (SEQ ID NO:1) where X₁=R or D, X₂=N or T, X₃=H or F; a CDR L2 sequence of X₁AS (SEQ ID NO:35) where X₁=W or F; and a CDR L3 sequence of QQYYX₁X₂X₃X₄T (SEQ ID NO:2) where X₁=T or S, X₂=Y or I, X₃=P or no amino acid, X₄=R or L;
- and
- b) a heavy chain comprising a complementarity determining region (CDR) H1 sequence of GYX₁X₂TX₃DYY (SEQ ID NO:3) where X₁=S or T, X₂=I or F, X₃=S or no amino acid;
 - a CDR H2 sequence selected from the group consisting of IGYDGX₁K (SEQ ID NO:4) where X₁=S or T, and IYPGNGHT (SEQ ID NO:5); and
 - a CDR H3 sequence selected from the group consisting of TRDRANWDDYFDY (SEQ ID NO:6) and AYDLFNY (SEQ ID NO:7).
2. The isolated or purified antibody or fragment thereof of claim 1, wherein CDR L1 is selected from the group consisting of QSLLNSRNQKHN (SEQ ID NO:8) and QSLLNSDTQKNF (SEQ ID NO:9).
3. The isolated or purified antibody or fragment thereof of claim 1 or 2, wherein CDR L2 is selected from the group consisting of WAS (SEQ ID NO:36) and FAS (SEQ ID NO:37).
4. The isolated or purified antibody or fragment thereof of any one of claims 1 to 3, wherein CDR L3 is selected from the group consisting of QQYYTYRT (SEQ ID NO:10) wherein X is P or no amino acid; and QQYSIPLT (SEQ ID NO:11).
5. The isolated or purified antibody or fragment thereof of any one of claims 1 to 4, wherein CDR H1 is selected from the group consisting of GYSITSDYY (SEQ ID NO:12) and GYTFTDYY (SEQ ID NO:13).
6. The isolated or purified antibody or fragment thereof of any one of claims 1 to 5, wherein the antibody or fragment thereof is selected from the group consisting of:
- a) a light chain comprising CDR L1 of sequence QSLLNSRNQKHN (SEQ ID NO:8), CDR L2 of sequence WAS (SEQ ID NO:36), and CDR L3 of sequence QQYYTYRT (SEQ ID NO:14); and a heavy chain comprising CDR H1 of sequence GYSITSDYY (SEQ ID NO:12), CDR H2 of sequence IGYDGSK (SEQ ID NO:15), and CDR H3 of sequence TRDRANWDYFDY (SEQ ID NO:6);
 - b) a light chain comprising CDR L1 of sequence QSLLNSRNQKHN (SEQ ID NO:8), CDR L2 of sequence WAS (SEQ ID NO:36), and CDR L3 of sequence QQYYTYRT (SEQ ID NO:14); and a heavy chain comprising CDR H1 of sequence GYSITSDYY (SEQ ID NO:12), CDR H2 of sequence IGYDGTK (SEQ ID NO:16), and CDR H3 of sequence TRDRANWDYFDY (SEQ ID NO:6); and
 - c) a light chain comprising CDR L1 of sequence QSLLNSDTQKNF (SEQ ID NO:9), CDR L2 of sequence FAS (SEQ ID NO:37), CDRL3 of sequence QQYSIPLT (SEQ ID NO:11); and a heavy chain comprising CDR H1 of sequence GYTFTDYY (SEQ

ID NO:13), CDR H2 of sequence IYPGNGHT (SEQ ID NO:5), and CDR H3 of sequence AYDLFNY (SEQ ID NO:7).

7. The isolated or purified antibody or fragment thereof of any one of claims 1 to 6, wherein the variable light (VL) domain comprises the sequence:

DIVMX₁QSPSSLAX₂SVGX₃KVTMSCKSSQSLLNSX₄
X₅QKNX₆LAWYQQKPGQS
PKX₇LX₈YX₉ASTX₁₀ESGVPDFRX₁₁GX₁₂GSGTD
FI LTIX₁₃SVX₁₄AEDLAX₁₅YX₁₆C
QQYYX₁₇X₁₈X₁₉X₂₀TFGX₂₁GTKLEIK (SEQ ID NO:17) where X₁=S or T, X₂=V or M, X₃=E or O, X₄=R or D, X₅=N or T, X₆=H or F, X₇=L or I, X₈=I or V, X₉=W or F, X₁₀=R or K, X₁₁=S or I, X₁₂=D or S, X₁₃=S or T, X₁₄=K or Q, X₁₅=V or D, X₁₆=Y or F, X₁₇=T or S, X₁₈=Y or I, X₁₉=P or no amino acid, X₂₀=R or L, X₂₁=G or A.

8. The isolated or purified antibody or fragment thereof of claim 7, wherein the variable light (VL) domain comprises a sequence selected from the group consisting of:

DIVMSQSPSSLAVSVGKVTMSCKSSQSLLNSRN-
QKNHLAWYQQKPGQSPKL LIYWASTRESGPV-
DRFX, GDGSQTDFTLTISSVKAEDLAVYYC-
QQYYTYRTFGG GTKLEIK (SEQ ID NO:18) where X₁=S or T; and

DIVMTQSPSSLAMSVGQKVVTMSCKSSQSLLNS-
DTQKNFLAWYQQKPGQSPKIL VYFASTKES-
GVPDRFIGSGSGTDFTLTITSVQAEDLADYFC-
QQYYSIPLTFGAGT KLELK (SEQ ID NO:19).

9. The isolated or purified antibody or fragment thereof of any one of claims 1 to 8, wherein the variable heavy (VH) domain comprises a sequence selected from the group consisting of:

DVQLQESGPGLVKPSQSLSLTCSTVTGYSITSYDYY-
WNWIRQFPGNKLEWMAYIG
YDGX₁KNYNPSLKNRISITRDTSKNQFFLKLNSV
TTDDTATYYCTDRANWDDY FDYWGQGTTLT-
VSS (SEQ ID NO:20) X₁=S or T; and
QIQLQQSGPELVKPGAPVKISCKASGYTFTDYYIH-
WVNQRPGQGLEWIGYIYPG NGHTVYNQKFK-
VRATLTADNPSSTAYLQLNSLTSEDSGVYFCAY-
DLFNYWGQ GTLTVSA (SEQ ID NO:21).

10. The isolated or purified antibody or fragment thereof of any one of claims 1 to 9, wherein the isolated or purified antibody or fragment thereof comprises a sequence selected from the group consisting of

a) a variable light (V_L) domain of sequence:

(SEQ ID NO: 22)
DIVMSQSPSSLAVSVGKVTMSCKSSQSLLNSRNQKNHLAWYQQKPGQSP
KLLIYWASTRESGPVDFRSQGDGSQTDFTLTISSVKAEDLAVYYCQQYYTY
RTPGGGTKEIK;

and variable heavy (V_H) domain of sequence:

(SEQ ID NO: 24)
DVQLQESGPGLVKPSQSLSLTCSTVTGYSITSYDYYWNWIRQFPGNKLEWMA
YIGYDGSKNYNPSLKNRISITRDTSKNQFFLKLNSVTTDDTATYYCTDR
ANWDDYFDYWGQGTTLTVSS;